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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,295	01/26/2004	David B. Knowles	10052/4801	9290
26646	7590	03/15/2006	EXAMINER	
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			YAMNITZKY, MARIE ROSE	
			ART UNIT	PAPER NUMBER
			1774	
DATE MAILED: 03/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/765,295

Applicant(s)

KNOWLES ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 Jan 2004, 12 Apr 2004 and 01 Aug 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date rec'd 12 Apr 2004 and 01 Aug 2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Art Unit: 1774

1. Claims 1-12, 17, 22-46, 51 and 56-70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The variable “n” appears in the formula set forth in independent claims 1 and 35, and various dependent claims. The variable “n” also appears in the definitions of R_3 , R_4 and R_6 as set forth in claims 1, 22, 35 and 57. In claims 1 and 35, n is defined in terms of the maximum number of ligands that may be attached to the metal. In claims 22 and 57, n is not defined. The definition of the variable “n” as it appears in the definition of R_3 , R_4 and R_6 as set forth in claims 1, 22, 35 and 57 is not clear, and thus the scope of C_nF_{2n+1} is not clear. (If there is no specific limit on “n” in C_nF_{2n+1} , the examiner suggests that applicant use the term --perfluoroalkyl-- instead of “ C_nF_{2n+1} ”, and delete “ CF_3 ” since CF_3 is a perfluoroalkyl).

Per claims 1, 22 and 57, ring A can be optionally substituted with one or more substituents Z, which means that R_4' , R_5' and R_6' of the formula set forth in claims 2, 23 and 58 must be H or Z. The definition of R_4' , R_5' and R_6' as set forth in claims 2, 23 and 58 is not fully consistent with the definition of Z in claims 1, 22 and 57 in allowing R_4' , R_5' and R_6' to be aralkyl and/or to be optionally substituted by one or more substituents Z.

Per claim 35, ring A can be optionally substituted with one or more non-aromatic groups, which means that R_4' , R_5' and R_6' of the formula set forth in claim 36 must be H or a non-aromatic group. The definition of R_4' , R_5' and R_6' as set forth in claim 36 is not fully consistent with the definition of ring A in claim 35 in allowing R_4' , R_5' and R_6' to be aryl, heteroaryl, aralkyl

and/or to be optionally substituted by one or more substituents Z (Z encompassing aromatic groups).

Claims 22-34 and 57-70: Proper antecedent basis is lacking for “M” as recited in the second line after the formula in claims 22 and 57.

Claims 35-70: Claims 35 and 57 recite “the emissive layer further comprising” but the only positively recited component of the emissive layer is the emissive material of the specified formula (in the case of claim 35 and dependents) or the emissive material having a ligand of the specified formula (in the case of claim 57 and dependents). It is not clear if the term “further” requires that the emissive layer comprise something in addition to the defined emissive material.

2. Regarding claim interpretation:

In light of paragraph [0062] of the specification, the examiner interprets “alkylaryl” as used in the claims to mean an aromatic-substituted alkyl group. (The examiner notes that “alkylaryl” conventionally means an alkyl-substituted aryl group.)

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1774

4. Claims 1, 2, 22, 23, 35, 36, 56-58 and 70 are rejected under 35 U.S.C. 102(b) as being anticipated by Takiguchi et al. (WO 03/00661) or under 35 U.S.C. 102(e) as being anticipated by Takiguchi et al. (US 2003/0235712 A1).

(The 102(e) date for Takiguchi's US publication is July 17, 2002, the filing date of Takiguchi's U.S. Appl. No. 10/181,342.)

In Takiguchi's WO publication, for example, see the abstract and pages 5, 12-16, 18, 22 and 24.

In Takiguchi's US publication, for example, see the abstract, pages 2, 5-13, 17 and 18, and paragraph [0118].

Prior art compound Nos. 34, 134, 317 and 367 are four specific examples of prior art compounds that meet the limitations of the compound defined by present claims 1, 2, 22 and 23, and the compound required for the device of present claims 35, 36, 56-58 and 70. These prior art compounds are disclosed for use in a luminescence layer of an electroluminescence device, the device comprising the luminescence layer disposed between an anode and a cathode.

Compound No. 34, for example, is a compound having the structure set forth in present claim 1 wherein M is Ir, R₃' and R₆ are bridged by -CR₂-CR₂- wherein each R is H, R₅ is a heteroaryl group, ring A is an aromatic heterocyclic ring (the ring required by the structure set forth in present claim 2 wherein each of R₄', R₅' and R₆' is H), each of R₃ and R₄ is H, m is 3 and n is 0 (or m is 1 or 2, n is 1 or 2, m+n=3, and the (X-Y) ligand is a substituted phenylpyridine ligand).

Art Unit: 1774

5. Claims 1, 2, 6, 7, 22, 23, 27, 28, 35, 36, 40, 41, 56-58, 62, 63 and 70 are rejected under 35 U.S.C. 102(e) as being anticipated by Brown et al. (US 2004/0086743 A1).

The applied reference has a common inventor with the instant application, but a different inventive entity. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In Brown's published application, for example, see the abstract, Figure 6 and paragraphs [0028], [0052]-[0057] and [0068]-[0071].

The ligand of the 16th formula shown in Figure 6 of Brown's published application is a ligand within the scope of the ligand required for the compound defined by present claims 1, 2, 6, 7, 22, 23, 27 and 28, and the compound required for the device of present claims 35, 36, 40, 41, 56-58, 62, 63 and 70.

For example, the ligand of the 16th formula in Brown's Figure 16 is a ligand as required for the compound of present claim 1 wherein R₃' and R₆ are bridged by -CR=CR- wherein each R is H, R₅ is an aryl group (a phenyl group), ring A is an aromatic heterocyclic ring (the ring required by the structure set forth in present claim 2 wherein each of R₄', R₅' and R₆' is H), and each of R₃ and R₄ is H.

The ligand of this formula is disclosed as a representative photoactive ligand for an emissive material of the formula IV as shown in paragraph [0070]. The emissive material can be

Art Unit: 1774

utilized in an emissive layer of an organic light emitting device comprising the emissive layer disposed between an anode and a cathode.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 6, 7, 22, 23, 27, 28, 35, 36, 40, 41, 56-58, 62, 63 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al. (WO 03/00661) or Takiguchi et al. (US 2003/0235712 A1) as applied to claims 1, 2, 22, 23, 35, 36, 56-58 and 70 above, and for the further reasons set forth below.

Takiguchi et al. disclose specific examples of compounds within the scope of present claims 1, 2, 22, 23, 35, 36, 56-58 and 70 in which R₅ is a heteroaryl group (a thienyl group of Takiguchi's formula Tn5).

Takiguchi et al. do not disclose any specific examples of compounds within the scope of present claims 1, 2, 6, 22, 23, 27, 35, 36, 40, 56-58, 62 and 70 wherein R₅ is a substituted or unsubstituted pyridyl group, but such compounds are suggested by the prior art.

Takiguchi et al. do not disclose any specific examples of compounds within the scope of present claims 1, 2, 6, 7, 22, 23, 27, 28, 35, 36, 40, 41, 56-58, 62, 63 and 70 wherein R₅ is an aryl

Art Unit: 1774

group such as a substituted or unsubstituted phenyl or naphthyl group, but such compounds are suggested by the prior art.

Takiguchi et al. teach that a phenyl, naphthyl or pyridyl group can be used for the same purpose as a thienyl group. For example, see page 15 in the WO publication and pages 11-12 in the US publication. Takiguchi's formulae Ph2 and Ph3 represent phenyl groups, formulae Np3/Npc (Np3 in the WO publication; Npc in the US publication) and Np4 represent naphthyl groups, and formulae Pi2 and Pi3 represent pyridyl groups. A group of any one of these formulae may be used for the same purpose as the thienyl group of Takiguchi's formula Tn5.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other compounds similar to the specific compounds disclosed by the prior art and within the prior art's disclosure in order to provide additional compounds suitable for the purposes of the prior art. One of ordinary skill in the art at the time of the invention would have been motivated to make similar compounds with the expectation that similar compounds would have similar properties and could be used for the same purpose. One of ordinary skill in the art at the time of the invention would have reasonably expected that compounds similar to Takiguchi's compound Nos. 34, 134, 317 and 367, but having a group of one of formulae Ph2, Ph3, Np3/Npc, Np4, Pi2 or Pi3 in place of the group of formula Tn5, would be luminescent and could be used in the luminescence layer of Takiguchi's device.

8. Claims 1-4, 6-25, 27-38, 40-60 and 62-70 are rejected under 35 U.S.C. 103(a) as being obvious over Brown et al. (US 2004/0086743 A1) as applied to claims 1, 2, 6, 7, 22, 23, 27, 28, 35, 36, 40, 41, 56-58, 62, 63 and 70 above, and for the further reasons set forth below.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Brown et al. anticipate some compounds within the scope of the present claims, and suggest others.

While the ligand of the 16th formula in Brown's Figure 16 provides compounds within the scope of present claim 1 wherein R₃' and R₆ are bridged by -CR=CR- wherein each R is H,

Brown et al. teach that the bridge may instead be $-CR_2-CR_2-$ wherein each R is H (e.g. see paragraph [0056]).

Brown et al. also teach that the photoactive ligand may be a phenylpyridine, phenylisoquinoline or phenylquinoline ligand as depicted, for example, by the 1st, 18th and 19th formulae in Figure 6. These are ligands in which ring A is pyridine, quinoline or isoquinoline as taught in paragraph [0056]. Although the ring A of the ligands depicted in Figure 6 are not substituted at the position corresponding to R₃' of the present formulae, ring A may be optionally substituted as taught in paragraph [0056]. Absent a showing of superior/unexpected results commensurate in scope with the present claims, it is the examiner's position that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds having ligands similar to those disclosed in Brown's Figure 6 and within Brown's disclosure in order to provide additional compounds suitable for the purposes of the prior art. One of ordinary skill in the art at the time of the invention would have been motivated to make similar compounds with the expectation that similar compounds would have similar properties and could be used for the same purpose. One of ordinary skill in the art at the time of the invention would have reasonably expected that compounds having ligands similar to Brown's ligands of the 1st, 18th or 19th formulae in Figure 6, having a substituent on the nitrogen-containing ring would be emissive and could be used in the emissive layer of Brown's device. With respect to the requirement of claims 8-21, 29-34, 42-55 and 64-69 for a methyl group at the R₃' position, Brown et al. teach that the ring A may be substituted with an alkyl group. As would

be recognized by one with general knowledge of organic chemistry, a methyl group is the simplest possible alkyl group.

9. Claims 1, 2, 22, 23, 35, 36, 56-58 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamatani et al. (US 2003/0059646 A1).

For example, see paragraphs [0038]-[0044] and [0082] and the claims. Kamatani et al. suggest compounds that meet the limitations of the compound defined by present claims 1, 2, 22 and 23, and the compound required for the device of present claims 35, 36, 56-58 and 70. Kamatani's compounds are disclosed for use in a luminescence layer of an electroluminescence device, the device comprising the luminescence layer disposed between an anode and a cathode.

Kamatani's compound No. 36 (see p. 9, with reference to pp. 6 and 8 for the structures of Ph and P1) is a compound similar to the compound defined in present claims 1, 2, 22 and 23, differing only in that this prior art compound lacks a substituent at the position corresponding to present R₃'. Kamatani's compound No. 36 is a compound having the structure shown in present claim 1 wherein M is Ir, R₃' is H, ring A is an aromatic heterocyclic ring (the ring required by the structure set forth in present claim 2 wherein each of R₄', R₅' and R₆' is H), R₅ is a heteroaryl group, each of R₃, R₄ and R₆ is H, m is 3 and n is 0 (or m is 1 or 2, n is 1 or 2, m+n=3, and the (X-Y) ligand is a substituted phenylpyridine ligand).

R₅ in Kamatani's P1 (pyridine ring) structure corresponds to present R₃'. While R₅ is H in Kamatani's compound No. 36, R₅ is not limited to H. The pyridine ring may be substituted at any of the four available positions. Kamatani's compound Nos. 51 and 58, for example, have an

alkyl substituent at R₅. Absent a showing of superior/unexpected results commensurate in scope with the present claims, it is the examiner's position that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds similar to the specific compounds disclosed by Kamatani et al. and within the prior art disclosure in order to provide additional compounds suitable for the purposes of the prior art. One of ordinary skill in the art at the time of the invention would have been motivated to make similar compounds with the expectation that similar compounds would have similar properties and could be used for the same purpose. One of ordinary skill in the art at the time of the invention would have reasonably expected that compounds similar to Kamatani's compound No. 36, having a substituent at R₅ of P1, such as an alkyl group as in Kamatani's compound No. 51 or 58, would be luminescent and could be used in the luminescence layer of Kamatani's device.

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1, 2, 6, 7, 22, 23, 27, 28, 35, 36, 40, 41, 56-58, 62, 63 and 70 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 16, 20, 35 and 39-41 of copending Application No. 11/002,188. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claims are generic for the compound defined by copending claim 35, which is also within the scope of copending claims 1, 16, 20 and 39-41, and a device comprising such a compound.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Miscellaneous:

Claims 1, 22, 35 and 57, 14th and 20th lines after the formula: “substitutent” should read --substituent--.

Claims 1, 22, 35 and 57, 17th line after the formula: “alterntatively” should read --alternatively-- and “from” should read --form--.

Claims 1, 22, 35 and 57, 19th line after the formula: “substitutents” should read --substituents--.

Claims 2, 23, 36 and 58, 2nd-3rd lines after the formula: the second occurrence of “alkenyl, alkynyl, heteroalkyl” should be deleted.

Art Unit: 1774

Claim 39, line 1: "material" should be deleted.

Claims 50, 51 and 55: The examiner suggests changing "having" to --wherein the compound has-- since the structure shown is the structure of the compound rather than the structure of the device.

13. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
March 10, 2006



MARIE YAMNITZKY
PRIMARY EXAMINER

1774